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ABSTRACT

Since 1979, DeKalb Community College has used the Reading, English and Mathematics (REM) Test, which combines testing materials from three different sources, as an admissions and placement instrument. In spring 1984, a study was conducted to verify the results of a previous investigation, which had revealed significant correlation between REM Test placement levels and Scholastic Achievement Test (SAT) scores, and to develop conversion tables for REM and SAT scores. The study analyzed the records of 581 students whose REM and SAT scores were recorded at the Testing Center between September 1982 and September 1983 using Pearson product-moment correlation coefficients and scattergrams. Study findings revealed: (1) a significant relationship existed between REM and SAT scores, with a correlation coefficient of .76 for total SAT and total REM scores; (2) scattergrams showed that the most accurate values of REM Test verbal scores were computed from SAT verbal scores in the range 200 to 540; and (3) the most accurate values for REM Test math scores were computed from SAT math scores in the range 250 to 560. Based on study findings, it was concluded that the REM Test had concurrent validity with the SAT and recommended that the conversion tables developed in the study be used with caution as they were not capable of providing categorical predictions of student test performance. (HB)

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The DeKalb REM Test-SAT Replication Study

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The DeKalb REM Test-SAT Replication Study

Abstract

The study investigated the extent that DeKalb Community College (DCC) REM Test scores compare with Scholastic Aptitude Test (SAT) scores. It was prompted by recommendations to verify the results of a previous study conducted by the Office of Research and Planning, and by concerns to compare DCC admissions with criteria in other postsecondary institutions. The REM Test is the admissions-placement instrument successfully used since 1979 to facilitate incoming students on the four campuses of DCC.

The 581 cases used for statistical treatment in the study were retrieved on computer tape by the DCC Administrative Computing Center from the 1982-1983 Enrollment Files. The cases represent DCC students 20 years old and under from all campuses who had taken the REM Test and the SAT. Statistical procedures included the Pearson product-moment correlation coefficient and Scattergram analyses. The SPSS computer run was executed by Georgia Institute of Technology's Institutional Studies.

The results showed a .76 correlation coefficient for total SAT scores and total REM Test scores. It also showed correlation coefficients of .73 for SAT Verbal scores and REM Test Verbal scores, and of .72 for SAT Mathematics scores and REM Test Mathematics scores. All coefficients were found at the .001 significance level. It was concluded that there is a significant relationship between REM Test scores and SAT scores of DCC students. The concurrent validity found in the previous study was therefore verified in this study. Scattergrams with appropriate regression equations provided a table to convert SAT scores from REM Test scores, and a table to convert REM Test scores from SAT scores.

It was recommended that the results of the study be considered in any likely comparisons of DCC admissions criteria. Also, it was recommended that the REM Test be continued as the admissions-placement instrument at DCC.

The DeKalb REM Test-SAT Replication Study

Introduction

The purpose of The DeKalb REM Test-SAT Replication Study was to compare DeKalb Community College (DCC) REM Test scores with Scholastic Aptitude Test (SAT) scores. The DCC REM Test is the admissions instrument used since 1979 to facilitate a viable student placement and open door admissions policy. The study was designed to verify the results of a previous study and to develop conversion tables for the REM Test and the SAT.

The previous study, conducted by the Office of Research and Planning in June, 1983, was entitled "The DeKalb REM Test Placement Levels and the SAT: Concurrent Validity." It compared REM Test Placement Levels with SAT scores, it found significant correlation coefficients, and it recommended replication for further verification. The present study provides replication, but it is more precise in that it compares REM Test scores instead of REM Test Placement Levels. Since other Georgia postsecondary institutions rely more on SAT scores for student admissions, it was felt that a study comparing REM Test scores with SAT scores could better compare DCC admissions criteria to those in other institutions, and could aid the decision-making process at DCC.

REM Test raw scores

The REM Test is a combination of Reading, English, and Mathematics selected from three different sources. The Reading portion is the Nelson-Denny Reading Test which generates raw scores of 1-136 in

reading comprehension and vocabulary. The English portion is the Test of Standard Written English which generates raw scores of 1-50 in grammar. The Mathematics portion is the Mathematics Placement Test (developed by the DCC Mathematics Department) which generates raw scores of 1-57 in Mathematics skills. Each of these instruments are determinants of REM Test Placement Levels which designate specific and appropriate courses for incoming students. In that context the three-hour long REM Test is utilized as a student placement instrument as well as a student admissions instrument.

Adjusted SAT raw scores

Just as the REM Test focuses on two areas of competence--Verbal (Combined Reading and English) and Mathematics--the SAT does likewise. The SAT consists of two sections, Verbal and Mathematics, with adjusted raw scores ranging from 200 to 800 in each section. The two adjusted raw scores are those reported for consideration in the educational environment. The SAT is usually administered to students in their senior year of high school.

Limitations and basic question

Since DCC does not require SAT scores for admissions, applicants often do not register SAT scores or dates when it was taken with the institution. Due to data retrieval limitations resulting from this condition, the study was limited to REM Test scores and SAT scores recorded between September 1982 and September 1983 of DCC students 20 years old and under. The study was also limited to the Verbal and Mathematics areas of competence. The basic question of the study was: How do REM Test scores compare with SAT scores?

Hypothesis

The following null hypothesis was generated in order to provide guidance for the study and to facilitate the statistical treatment of data: There is no significant relationship between REM Test scores and SAT scores of DCC students.

Review of Related Literature

The related literature contains several comparisons of tests with the SAT. Pedersen (1975) compared grades in freshman Chemistry with SAT scores. For a sample of 325 it was found that performance on the Verbal and Mathematics sections of the SAT exhibited low predictive validity in a relation to a criterion of grades in freshman Chemistry.

Marron (1965) compared SAT scores and College Entrance Examination Board (CEEB) achievement tests in Mathematics and English Composition for US Military Academy and Air Force cadets before and after they had attended preparatory schools. SAT scores increased significantly beyond what was considered typical for a senior high school year, but the cadets performed significantly poorer than what was predicted by the CEEB achievement scores, as indicated by an adjusted correlation of .35.

In 1977 the DCC Allied Health Admissions Office and the Counseling Office compared Georgia Statewide Testing Program (GSTP) scores with SAT scores, and used data collected from beginning freshman (Wright, G.B. personal communication, March 18, 1983). The study found correlation coefficients ranging from .79 to .85 in the Verbal areas and from .75 to .92 in the Math areas. The study led to the development of a table which determined SAT Scores from GSTP scores. However, the study was limited to a sample of

58 DCC students.

As previously indicated, Johnson (1983) compared DCC REM Test Placement Levels with SAT scores in response to challenges made to high technology admissions at DeKalb Area Vocational-Technical School, the occupational unit of DCC. The results showed correlation coefficients ranging from .63 to .71 with a sample of 1090. The study recommended replication which could directly compare REM Test scores with SAT scores, use a more restricted universe, and develop scattergrams and regression equations to convert both REM Test scores and SAT scores.

Methodology

The 581 cases of this study were retrieved on computer tape by the DCC Administrative Computing Center from the Testing Centers of each campus. The cases represent students who were 20 years old and under whose REM Test and SAT scores were recorded at the Testing Centers between September 1982 and September 1983. The sample represents approximately four percent of all DCC students enrolled in the Fall 1983 Quarter. In all cases the REM Test was administered by DCC, and SAT scores were retrieved from the students' high school transcripts.

Statistical procedures

Two statistical procedures were used in order to compare REM Test scores with SAT scores. Pearson product-moment correlation coefficients and scattergrams were computed at Georgia Institute of Technology's Institutional Studies. All the analyses were conducted by using the subprograms Pearson Correlation and Scattergram from the Statistical Package for the Social Sciences (SPSS) (Nie, Hull, Jenkins, Steinbrenner, and Bent, 1975).

Results and Discussion

Table 1 shows Pearson correlation coefficients that describe the relationships between SAT scores and their major counterparts noted in REM Test scores. It can be seen that total SAT scores and total REM Test scores had a correlation coefficient of .76, that SAT Mathematics scores and REM Test Mathematics scores had a correlation coefficient of .72, and that SAT Verbal scores and REM Test Verbal scores (combined Reading and English scores) had a correlation coefficient of .73. In all cases the correlations met or exceeded the .001 significance level. Based upon these observations the null hypothesis was rejected. There appears to be a significant relationship between REM Test scores and SAT scores of DCC students.

Table 1. Pearson Correlations Between REM Test and SAT Variables (N = 581)

SAT Scores	REM Test Scores		
	TOTAL	MATH	VERBAL
TOTAL	.7575*	----------	------
MATH	------	.7222*	------
VERBAL	------	----------	.7255*

* .001 level of significance

Concurrent validity verified

As can be seen in Figure 1, all of the REM Test score-SAT score correlation coefficients found in this study are similar to those found in the previous study. Based upon these observations, this study verifies the results of concurrent validity found in the previous study.

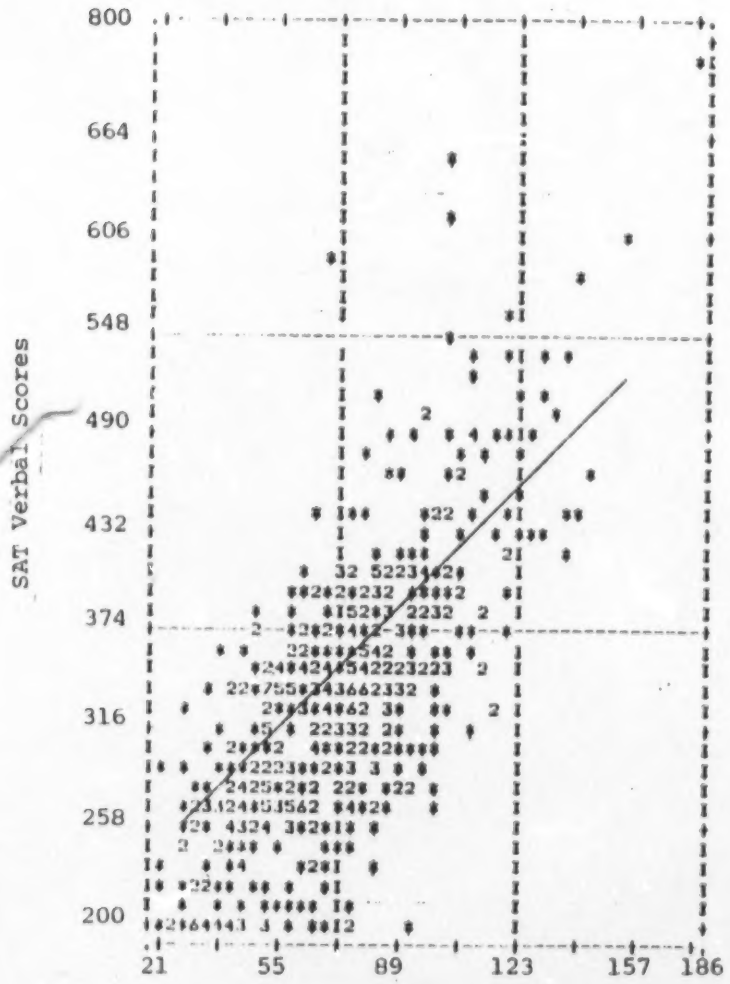
Figure 1. Correlation Coefficient Comparisons of REM Test scores and REM Test Placement Levels with SAT scores.

Present Study: REM Test Score - SAT Score Correlations	Variables	Previous Study: REM Test Placement Levels - SAT Score Correlations
.7575	REM Test Total - SAT Total	.7638
.7255	REM Test Verbal - SAT Verbal	.7070
.7222	REM Test Math - SAT Math	.6498
.6544	REM Test Reading - SAT Verbal	.6403
.6168	REM Test English - SAT Verbal	.6319

Scattergrams and SAT conversions

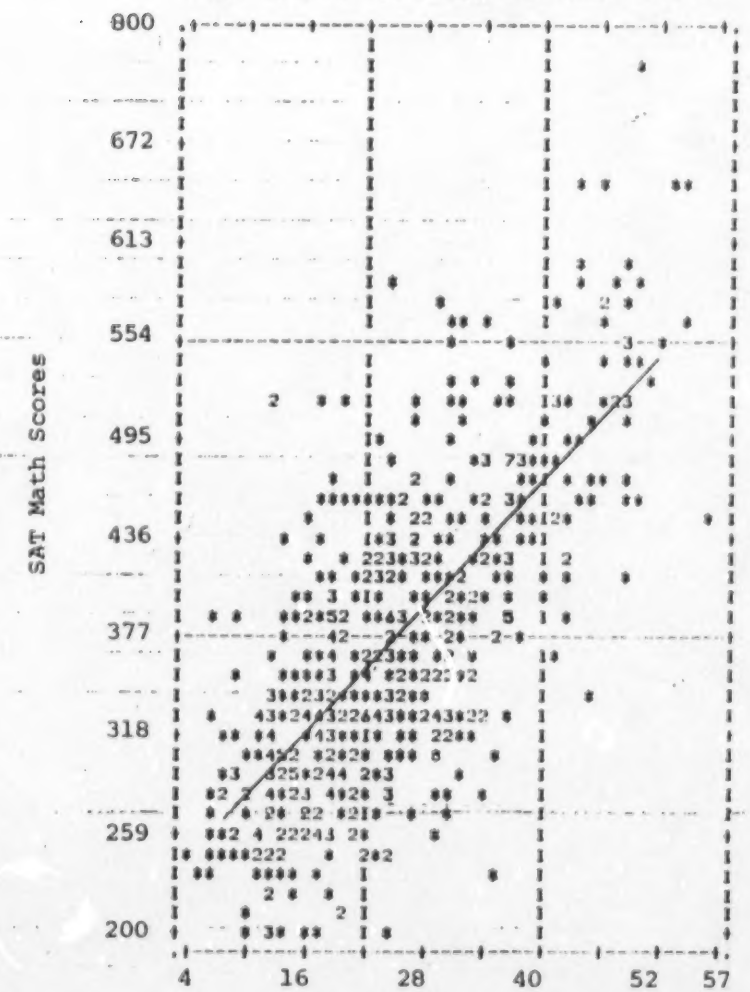
Scattergrams were developed for the two major variables (Verbal scores and Mathematics scores) in order to provide a predictive dimension to the study. The least-squares criterion was used to determine regression equations which predict the scores. The regression equation $y = b x + a$ (where y = the dependent variable, b = slope, x = the independent variable, and a = intercept) was used to draw a regression line on each scattergram (Minium, 1970). The scattergram in Figure 2 shows that most REM Test Verbal scores in the sample ranged from 22 to 140. Therefore, the most accurate values of SAT Verbal scores are computed from REM Test Verbal scores in that range. The scattergram in Figure 3 shows that most REM Test Math scores in the sample ranged from 6 to 50. Therefore, the most accurate values of SAT Math scores are computed from REM Test Math scores in that range. Table 2 shows the REM Test - SAT Conversion Table developed from the scattergrams in Figures 2 and 3. This Table can be used to approximate SAT scores when REM Test scores have been obtained.

Figure 2. Scattergram Predicting SAT Verbal Scores from REM TEST Verbal Scores



N=581 r=.73 y=2.33 · X + 170.85

Figure 3. Scattergram Predicting SAT Math Scores from REM TEST Math Scores



N=581 r=.72 y=6.22 · X + 222.72

Table No. 2 DEKALB COMMUNITY COLLEGE REM TEST-SAT CONVERSION TABLE

Verbal	
REM	SAT
1	200
2-18	210
20-22	220
24-26	230
28-30	240
32-36	250
38-40	260
42-44	270
46-48	280
50-52	290
54-56	300
58-60	310
62-66	320
68-70	330
72-74	340
76-78	350
80-82	360
84-86	370
88-90	380
92-96	390
98-100	400
102-104	410
106-108	420
110-112	430
114-116	440
118-120	450
122-126	460
128-130	470
132-134	480
136-138	490
140	500

Verbal	
REM	SAT
142	510
144	520
146	530
148	540
150	550
152	560
154	570
156	580
158	590
160	600
162	610
164	620
166	630
168	640
170	650
172	660
173	670
174	680
175	690
176	700
177	710
178	720
179	730
180	740
181	750
182	760
183	770
184	780
185	790
186	800

Math	
REM	SAT
1	200
2	210
3	220
4	230
5	240
6	250
7	260
8	270
9-10	280
11	290
12-13	300
14	310
15-16	320
17-18	330
19	340
20-21	350
22	360
23-24	370
25-26	380
27	390
28-29	400
30	410

Math	
REM	SAT
31-32	420
33-34	430
35	440
36-37	450
38	460
39-40	470
41-42	480
43	490
44-45	500
46	510
47-48	520
49	550
50	580
51	610
52	640
53	670
54	700
55	730
56	760
57	800

Date: May, 1984

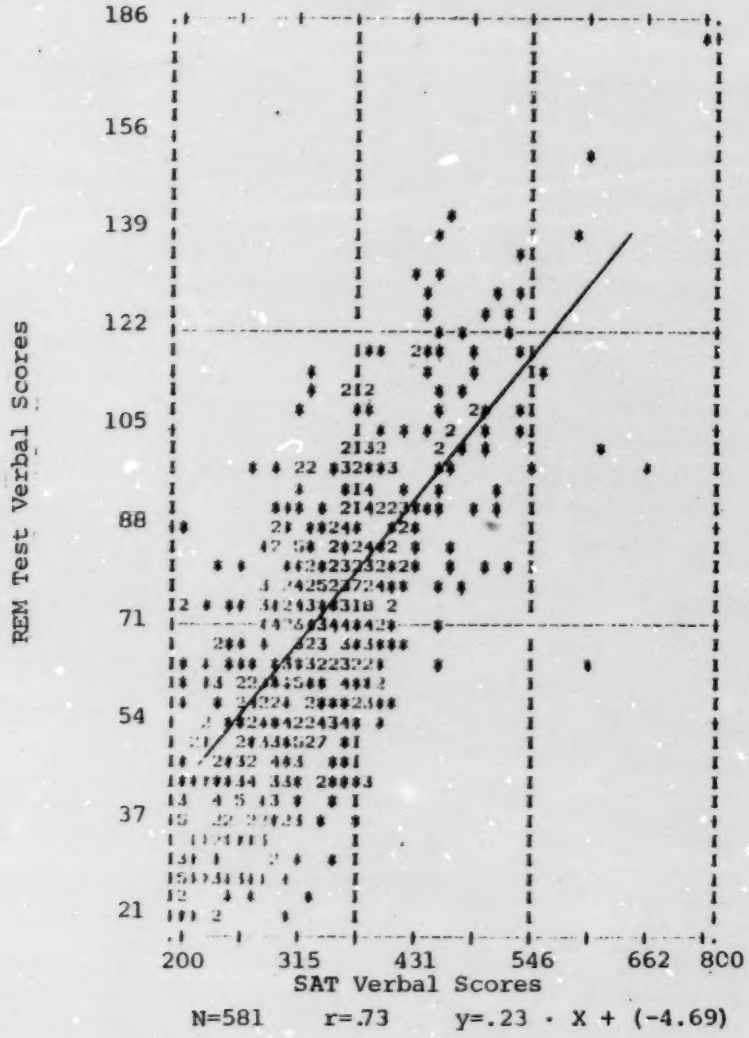
To convert to SAT Scores:

1) Add REM Test Reading and REM Test English scores to obtain a single REM Test Verbal score.
2) Find SAT score corresponding to REM Test Verbal or REM Test Math score according to Table.

Scattergrams and REM Test conversions

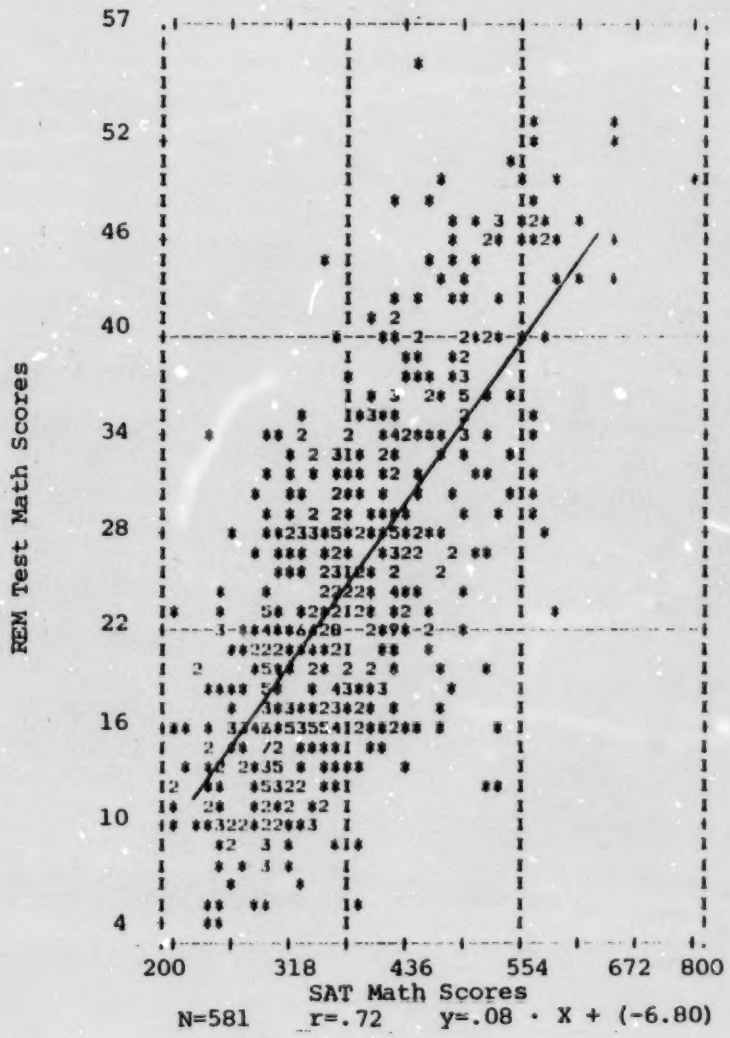
Scattergrams were also developed to convert REM Test scores from SAT scores as is shown in Figures 4 and 5. The scattergram in Figure 4 shows that most SAT Verbal scores in the sample ranged from 200 to 540. Therefore, the most accurate values of REM Test Verbal scores are computed from SAT Verbal scores in that range. The scattergram in Figure 5 shows that most SAT Math scores in the sample ranged from 250 to 560. Therefore, the most accurate values of REM Test Math scores are computed from SAT Math scores in that range. Table 3 shows the SAT-REM Test Conversion Table developed from the scattergrams in Figures 4 and 5. This Table can be used to approximate REM Test scores when SAT scores have been obtained.

Figure 4. Scattergram Predicting REM Test Verbal Scores from SAT Verbal Scores



N=581 r=.73 y=.23 · X + (-4.69)

Figure 5. Scattergram Predicting REM Test Math Scores from SAT Math Scores



N=581 r=.72 y=.08 · X + (-6.80)

Table No. 3 DeKalb Community College SAT-REM Test Conversion Table

Verbal		Verbal		Math		Math	
SAT	REM	SAT	REM	SAT	REM	SAT	REM
200	30	510	114	200	8	440	35
210	40	520	116	210	10	450	36
220	45	530	118	220	12	460	37
230	50	540	120	230	14	470	38
240	52	550	122	240	16	480-490	39
250	54	560	124	250	18	500	40
260	57	570	127	260	19	510	41
270	60	580	130	270	20	520	42
280	62	590	132	280	21	530	43
290	64	600	134	290	22	540-550	44
300	67	610	136	300	23	560	45
310	70	620	138	310	24	570	46
320	72	630	140	320	25	580	47
330	74	640	142	330	26	590	48
340	76	650	144	340	27	600-610	49
350	78	660	146	350	28	620	50
360	80	670	148	360-370	29	630-650	51
370	82	680	150	380	30	660-690	52
380	84	690	152	390	31	700-720	53
390	87	700	154	400	32	730-750	54
400	90	710	156	410	33	760-770	55
410	92	720	158	420-430	34	780-790	56
420	94	730	160			800	57
430	96	740	162				
440	98	750	164				
450	100	760	166				
460	102	770	168				
470	104	780	170				
480	107	790	178				
490	110	800	186				
500	112						

Date: May, 1984

To convert to REM Test Scores:

1. Find REM Test Verbal (Combined Reading and English) score corresponding to given SAT verbal score.
2. Find REM Test Math score corresponding to given SAT Math score.

Conclusions and Recommendations

The results of this study verify the conclusions made in the study entitled "The DeKalb REM Test Placement Levels and the SAT: Concurrent Validity". The results clearly establish a significant correlation between DCC REM Test scores and SAT scores. Significant correlations were found for the SAT and its REM Test counterparts in three essential areas: total scores, Verbal scores, and Mathematics scores. Based upon these observations, it was concluded that the REM Test has concurrent validity with the SAT.

It is recommended that the Conversion Tables developed in this study be used with caution. The Tables are not capable of providing categorical predictions of REM Test scores or SAT scores, and they are not designed to supplant the REM Test, the REM Test Placement Levels, or the SAT. The Tables are best used as a guidance tool in cursory observations where both REM Test scores and SAT scores are considered, and where only one of the two Test scores are readily available.

The results of this study provide information which can smooth the path of transition as DCC anticipates and implements a change of its state governing agency. According to information submitted on December 6, 1983 by a Board of Regents University System of Georgia official to the DCC Committee To Study The Use of The SAT, the results of this study can be useful in one of four options:

1. In a total merger of DeKalb Community College with the Regents System, the REM Test and its associated Placement Levels could be retained. In that decision the results of this study could assist efforts to assure that the

Regents System's floor mandate of 330 Verbal - 330 Math SAT scores and the Basic Skills Examination requirements are also met.

2. In a total merger the REM Test and its associated Placement Levels could be abandoned. In that decision the results of this study could provide structure for historical admissions-placement comparisons.
3. In a merger which would include only DeKalb Junior College, DeKalb Tech could retain use of the REM Test and its associated Placement Levels if the College opted not to do so. The results of this study could then provide approximations for any dual student enrollment arrangements.
4. In case no merger takes place the results of this study could provide structure for closer comparison of DeKalb admissions criteria to that used in the Regents System.

It is recommended that DCC continue using the REM Test as an admissions-placement instrument. The concurrent validity established in this study and in the previous study suggests that REM Test measures are statistically consistent with SAT measures. Moreover, the REM Test Placement Levels have proven useful in removing much of the guesswork and subjective evaluation commonly made when SAT scores alone are used for student admissions. By establishing an instrument consistent with the SAT--the most commonly used college entrance test in the State of Georgia--DCC has more resolutely and qualitatively entered students for gainful progress in collegiate programs of study. DCC therefore provides a beacon for other postsecondary institutions which struggle with the problem of suitable placement for incoming students.

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